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UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK

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MAX IMPACT, LLC, CHANELIA LTD., and	:	
ARGO DEVELOPMENT & PRODUCTION,	:	
LTD.,	:	
	:	
Plaintiffs,	:	Case No. 09 Civ. 902 (LMM)
	:	
-against-	:	
	:	
SHERWOOD GROUP, INC.,	:	<b>VERIFIED</b>
	:	<b>AMENDED COMPLAINT</b>
	:	
Defendant.	:	
	:	<b>Jury Trial Demanded</b>

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Plaintiffs, by their attorneys, as and for its complaint against defendant, alleges upon information and belief:

**JURISDICTION AND VENUE**

1. This Court has jurisdiction over this matter pursuant to 28 U.S.C. §§1331 and 1338 and 15 U.S.C. §§1121 and 1125. Plaintiffs' claims are predicated upon the U.S. Patent Laws, as amended, 35 U.S.C. §271 *et seq.*, the Trademark Act of 1946, as amended, 15 U.S.C. §271 *et seq.*, and Lanham Act §43(a) relating to false designations of origin, and the Copyright Act, 17 U.S.C. §101 *et seq.* concerning copyright infringement.

2. This Court has supplemental jurisdiction under 28 U.S.C. §1367 for substantial and related claims brought under the statutory and common law of the State of New York.

3. Venue is founded on 28 U.S.C. §1391(b) and (c).

### **THE PARTIES**

4. Max Impact, LLC (“Max Impact”) is a limited liability company duly organized and existing under the laws of the state of Delaware, and maintains its principal place of business at 3961 Sepulveda Blvd., Suite 205, Culver City, CA 90230.

5. Chanelia Ltd. (“Chanelia”) is a corporation duly organized and existing under the laws of the United Kingdom, and maintains its principal place of business at King Street House, 15 Upper King Street, Norwich NR3 1RB, United Kingdom.

6. Argo Development & Production, Ltd. (“Argo”) is a corporation duly organized and existing under the laws of Israel, and maintains its principal place of business at 17 Zvi Shapire Street, Herzliya, Israel 46406.

7. Upon information and belief, Sherwood Group, Inc. (“Sherwood”) is a corporation duly organized and existing under the laws of the state of North Carolina, maintains its principal place of business at 1803 Res Blvd., Suite 201, Rockville, Maryland 20850, and conducts business in the State of New York.

### **FACTS COMMON TO ALL COUNTS**

8. On or about July 18, 1989, defendants Josephe Laniado (now deceased) and Moshe Harel, both of Jerusalem, Israel, obtained United States Patent No. 4,848,437 (hereinafter “the `437 patent”), a copy of which is annexed hereto as Exhibit “A”, having claims directed to a process for preparing a multi-layer, self-rollable plastic sheet, in conjunction with protecting the interior of a motor vehicle.

9. On or about January 5, 1993, Laniado and Harel obtained United States Patent No. 5,176,774 (hereinafter “the `774 patent”), a copy of which is annexed hereto as Exhibit “B”,

which is utilized, *inter alia*, for its production and sale of advertising banners comprised of a plastic-based compound that can be rolled and unrolled while retaining its shape.

10. Although at the time the '774 patent issued, the patent was assigned to Roll-Screens, Inc., on or about January 7, 2005, Rolls-Screens, Inc. assigned the patent to Argo, an Israeli company to which Harel is the sole owner and managing director.

11. On or about January 11, 2007, Chanelia, Harel and Argo entered into a licensing agreement, whereby Chanelia was granted sole, exclusive, worldwide rights to manufacture, market and sell products made in accordance with the claims of the '437 patent and the '774 patent.

12. In July 2007, Chanelia, in turn, entered into an agreement with Max Impact whereby the latter became the exclusive North American distributor and licensee of products made in accordance with the claims of the '437 patent and the '774 patent ("Distribution Agreement").

13. The Distribution Agreement provides that Max Impact shall, if dissatisfied with Chanelia's enforcement of the '437 patent and the '774 patent, "have the absolute right to institute any actions or replace Chanelia in an action against an infringer and/or to protect the Intellectual Property Rights."

14. By letter to Max Impact's James Manhardt dated July 25, 2007, Moshe Harel, both individually and as managing director of Argo, assented to the Distribution Agreement and consented to Max Impact exercising its rights under the Distribution Agreement.

15. Since entering into the Distribution Agreement, Max Impact has expended considerable time and economic resources in actively manufacturing, marketing and selling

hand-held, self-rollable banner, utilizing the `437 and `774 patents, under the registered ROLLABANA® trademark.

16. Since July 2007, and subsequent to the `437 and the `774 patents being ruled valid and infringed upon in this Court by Order of the Honorable Lawrence McKenna, U.S.D.J., SDNY, entered on March 7, 2007, in the matter of *Bana Holdings, USA, Inc. v. Argo Development & Production*, Case No. 04 CV 7200, plaintiffs and others have worked diligently to place similarly situated parties on notice of infringement and, if necessary, prosecute the infringers. *See* Order annexed hereto as Exhibit “C”.

17. In September 2007, counsel for Chanelia transmitted a cease-and-desist notice to Sherwood, advising defendant that it was manufacturing, marketing and selling a banner product in violation of the `437 and the `774 patents and attaching a copy of Judge McKenna’s Order of March 7, 2007. Defendant’s product is indistinguishable from the infringing “Fanbana” banner product at issue in the *Bana Holdings* action.

18. Despite this admonition, defendant’s counsel advised Chanelia’s counsel in October 2007 correspondence that Sherwood Group did not consider there to be any patent infringement.

19. In addition to marketing the Expand-A-Banner on its website [www.sherwoodpromos.com](http://www.sherwoodpromos.com), Sherwood also widely promotes its infringing product on no fewer than half dozen independent websites, among them: [www.logosportswear.com](http://www.logosportswear.com); [www.iaspromotes.com](http://www.iaspromotes.com); [www.lynmar.com](http://www.lynmar.com); [www.spiritaccessories.com](http://www.spiritaccessories.com); and [www.advertisingmagic.com](http://www.advertisingmagic.com). Sherwood also actively markets its banner to colleges, many of which carry its Expand-A-Banner on their university websites.

20. Thereafter, when Chanelia did not pursue legal action against Sherwood, Max Impact advised Chanelia in 2008 of its intention to exercise its rights under the Distribution Agreement to take legal action against Sherwood and brings this action.

21. Notwithstanding the plaintiffs' patent rights under the terms of its exclusive Distribution Agreement, and defendant having been served with a cease-and-desist notice, Sherwood continues to actively engage in the manufacture, marketing, import, export and sale of banner products, under the names "Expand-A-Banner", "Fanscrolls" or otherwise, which infringes upon the `437 and the `774 patents.

22. Most recently, Sherwood attended the Promotional Products Association International (PPAI) Expo, held in Las Vegas during January 12-16, 2009, an annual promotional products show sponsored by the PPAI trade association and attended by approximately 1,500 exhibitors and 14,000 distributors. Sherwood operated a kiosk marketing and displaying more than a half-dozen samples of the infringing Expand-A-Banner with signage identifying the product as "Expand-A-Banners" that competed directly with a booth promoting the patent-protected ROLLABANA®.

23. Following its appearance at this tradeshow, Sherwood modified its website [www.sherwoodpromos.com](http://www.sherwoodpromos.com) to change a webpage that was promoting its infringing "Fanscrolls" banner product as recently as January 15, 2009, identified as Sherwood Item No. PTZBF-FOYTC, to a webpage marketing *plaintiff Max Impact's Rollabana under the same Sherwood Item Number and acknowledging in the modified webpage's description field that "BamBams the Exclusive, legally authorized Promotional Products Supplier for the Rollabana and all products derived from the Patented (U.S. Patent #5176774) self-rolling material authorized by Max Impact, LLC . . . ."* Compare "Fanscrolls" and "Rollabana" webpages as they appeared on

Sherwood's website on January 15, 2009 and January 29, 2009, annexed hereto as Exhibit "D". Sherwood has posted the ROLLABANA® webpage on its website without the authorization or knowledge of Max Impact, and is posting a ROLLABANA® price list without the permission of or having consulted with Max Impact.

**COUNT I**

**PATENT INFRINGEMENT  
(35 U.S.C. §271, et seq.)**

24. Plaintiffs repeat and reallege paragraphs 1 through 23 of this Complaint as if fully set forth herein.

25. Defendant is manufacturing, advertising, distributing, offering to sell and/or selling a banner product that infringe upon the `437 and the `774 patents. Such marketing and sales has taken place in this judicial district and elsewhere in the United States having a detrimental economic effect in this judicial district.

26. Defendant has no license to conduct the activities complained of herein.

27. Defendant has willfully infringed upon the `437 and the `774 patents in violation of 35 U.S.C. §271, *et seq.*

28. Defendant's infringement of the `437 and the `774 patents has and will irreparably damage plaintiffs and others, depriving Max Impact of sales, profits and royalties to which it would otherwise have been entitled.

29. Defendant's infringement will continue unless enjoined by this Court, as plaintiffs have no adequate remedy at law.

**COUNT II**

**COPYRIGHT INFRINGEMENT  
(17 U.S.C. §101, et seq.)**

30. Plaintiffs repeat and reallege paragraphs 1 through 29 of this Complaint as if fully set forth herein.

31. Defendant, without plaintiffs' authorization or consent, and having knowledge of plaintiff's intellectual property rights, are distributing, advertising, offering for sale and/or selling plaintiff Max Impact's ROLLABANA® product to the consuming public by co-opting plaintiff Max Impact's copyrighted property in violation of 17 U.S.C. §101, *et seq.* Such marketing and sales has taken place in this judicial district and elsewhere in the United States having a detrimental economic effect in this judicial district.

32. Defendant has no license to conduct the activities complained of herein.

33. Defendant's infringement has and will irreparably damage plaintiff and others, depriving Max Impact of sales, profits and royalties to which it would otherwise have been entitled.

34. Defendant's infringement will continue unless enjoined by this Court, as Max Impact has no adequate remedy at law.

**COUNT III**

**FALSE DESIGNATION OF ORIGIN  
(15 U.S.C. §1125(a), Lanham Act §43(a))**

35. Plaintiffs repeat and reallege paragraphs 1 through 34 of this Complaint as if fully set forth herein.

36. Defendant's use of the `437 and the `774 patents via sale of the infringing Expand-A-Banner and Fanscrolls, coupled with its unauthorized efforts to market and sell Max

Impact's ROLLABANA® product on Sherwood's website, is very likely to cause confusion to consumers, the public and the trade resulting in their purchase of such products believing that Max Impact, Chanelia, Harel and/or Argo is the source of the products, and/or that there is some association between these entities and Sherwood and/or the products offered therefrom, and/or that Max Impact, Chanelia, Harel and/or Argo has sponsored or authorized defendant's otherwise unauthorized conduct.

37. As a result of the foregoing, defendants have falsely designated the origin of the products offered by Sherwood in violation of 15 U.S.C. §1125(a), Lanham Act §43(a).

38. Upon information and belief, defendant intends to continue its willful acts, and to act in bad faith, unless restrained by this Court.

39. Defendant's acts have damaged and will continue to damage plaintiffs for which there is no adequate remedy at law.

#### **COUNT IV**

##### **DECEPTIVE ACTS AND PRACTICES (New York General Business Law §349)**

40. Plaintiffs repeat and reallege paragraphs 1 through 39 of this Complaint as if fully set forth herein.

41. Defendant, without plaintiffs' authorization or consent, and having knowledge of plaintiffs' intellectual property rights, have distributed, advertised, offered for sale and/or sold infringing products to the consuming public in violation of New York General Business Law §349.

42. Defendant's use of simulations of plaintiffs' intellectual property, coupled with its unauthorized efforts to market and sell Max Impact's ROLLABANA® product on Sherwood's website, is very likely to cause and is causing confusion, mistake and deception among the



general purchasing public as to the origin of defendant's infringing products, and is likely to deceive the public into believing that defendant's infringing products originate from, are associated with, or are otherwise authorized by plaintiffs.

43. Defendant's deceptive acts and practices involve public sales activities of a recurring nature.

44. Defendant's acts have caused and will continue to cause plaintiffs irreparable harm unless enjoined by this Court, as plaintiffs have no adequate remedy at law.

## **COUNT V**

### **FALSE ADVERTISING (New York General Business Law §350)**

45. Plaintiffs repeat and reallege paragraphs 1 through 44 of this Complaint as if fully set forth herein.

46. Defendant's overwhelming and pervasive use of the '437 and the '774 patents and other indicia in its advertising and promotion of the banner product being offered for sale, coupled with its unauthorized efforts to market and sell Max Impact's ROLLABANA® product on Sherwood's website, deceives consumers into believing that defendant's Expand-A-Banner and Fanscrolls products are comparable to plaintiffs' product in quality, design and value, when it is not.

47. Defendant's acts constitute the making of intentionally false or misleading misrepresentations.

48. Upon information and belief, defendant intends to continue their willful acts and will continue to act in bad faith, unless restrained by this Court.

49. Defendant's acts have damaged and will continue to damage plaintiffs, for which there is no adequate remedy at law.

**COUNT VI**

**UNFAIR COMPETITION  
(New York General Business Law §360-1)**

50. Plaintiffs repeat and reallege paragraphs 1 through 49 of this Complaint as if fully set forth herein.

51. Defendant's activities as alleged above have created and continue to create a likelihood of injury to plaintiffs' public image and reputation for the provision and sale of high quality goods and services, and to dilute the distinctive quality of the plaintiffs' patented product and all rights held thereunder, in violation of §360-1 of the General Business Law of the State of New York.

52. Upon information and belief, defendant has willfully engaged in deceptive acts or practices in the conduct of its business in violation of §360-1 of the General Business Law of the State of New York.

53. Defendant's acts have damaged and will continue to damage plaintiffs, for which there is no adequate remedy at law.

**COUNT VII**

**COMMON LAW UNFAIR COMPETITION**

54. Plaintiffs repeat and reallege paragraphs 1 through 53 of this Complaint as if fully set forth herein.

55. Defendant's sale of their infringing product, coupled with its unauthorized efforts to market and sell Max Impact's ROLLABANA® product on Sherwood's website, is likely to cause confusion in the marketplace between plaintiffs' genuine, patented goods and those of defendant, thus constituting an infringement of plaintiffs' valuable common law rights.

56. Defendant is deliberately and willfully misappropriating and diverting plaintiffs' valuable proprietary rights, as well as the attendant goodwill and reputation, thereby competing unfairly with plaintiffs.

57. Upon information and belief, defendant's unfair competition has caused, and if allowed to continue, will continue to cause sales of plaintiffs' products to be lost and/or diverted to defendant. Defendant's unfair competition has caused substantial and irreparable damage and injury to plaintiffs and to its valuable goodwill and reputation, and unless enjoined by this Court, will continue to cause substantial and irreparable damage and injury to plaintiffs.

58. Defendant's acts have caused irreparable damage and will continue to damage plaintiffs, for which there is no adequate remedy at law.

**WHEREFORE**, plaintiffs demand judgment against defendant as follows:

- (a) That defendant and all those acting in concert with it, including its agents and servants, be preliminarily and permanently enjoined from manufacturing, vending, importing, distributing, selling, promoting or advertising any item being a copy, reproduction and/or colorable imitation of the plaintiff Max Impact's ROLLABANA®, or any product whose design infringes plaintiffs' patent rights or is substantially similar to the product protected by United States Patent No. 4,848,437, including any other of defendant's designs or products;
- (b) That defendant and all those acting in concert with it, including its agents and servants, be preliminarily and permanently enjoined from manufacturing, vending, importing, distributing, selling, promoting or advertising any item being a copy, reproduction and/or colorable imitation of the plaintiff Max Impact's ROLLABANA®, or any product whose design infringes plaintiffs' patent rights

or is substantially similar to the product protected by United States Patent No. 5,176,774, including any other of defendant's designs or products;

- (c) That defendant and all those acting in concert with it, including its agents and servants, be preliminarily and permanently enjoined from selling, promoting or advertising the ROLLABANA® on defendant's website absent plaintiff Max Impact's express authorization;
- (d) That defendant and all those acting in concert with it, including its agents and servants, be preliminarily and permanently enjoined from (i) infringing upon plaintiffs' patented product, (ii) unfairly competing with plaintiffs in any manner, (iii) engaging in false advertising, and (iv) engaging in deceptive conduct causing harm to the public;
- (e) That defendant be required to recall all infringing items and advertising and promotional materials, and thereafter to deliver up for destruction all infringing product, artwork, packaging, advertising and promotional materials, and any means of making such infringing items;
- (f) That defendant be directed to account to plaintiffs for all gains, profits and advantages derived from defendants' wrongful acts.
- (g) That defendant pay to plaintiffs any damages sustained by plaintiffs by reason of defendant's purposefully wrongful acts, together with interest thereon.
- (h) That plaintiffs be awarded statutory damages and reasonable attorneys' fees;
- (i) That defendant pay as damage for its conduct alleged herein a sum equal to three times the amount of the actual damages suffered by plaintiffs;
- (j) That defendant pay to plaintiffs the costs and disbursements of this action;

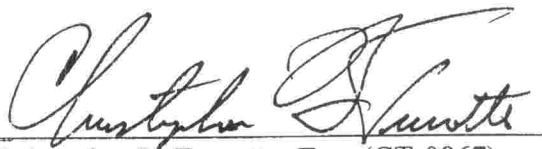
- (k) That plaintiffs be awarded pre-judgment interest on its judgment;
- (l) That plaintiffs be awarded such additional and further relief as the Court deems just and proper.

**JURY DEMAND**

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, a jury trial is hereby demanded.

Dated: New York, New York  
September 17, 2010

THE LAW OFFICE OF  
CHRISTOPHER B. TURCOTTE, P.C.

A handwritten signature in black ink, appearing to read "Christopher B. Turcotte", written over a horizontal line.

Christopher B. Turcotte, Esq. (CT-0867)  
575 Madison Avenue, 10<sup>th</sup> Floor  
New York, New York 10022  
*Attorneys for Plaintiffs*

**VERIFICATION**

STATE OF NEW JERSEY       )  
  ) ss.:  
COUNTY OF MORRIS        )

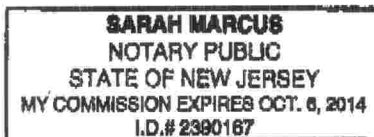
James H. Manhardt, being duly sworn, deposes and says:

I am a managing director of the plaintiff in the within action. I have read the foregoing Verified Amended Complaint, know the contents thereof and the same are true to my knowledge, except those matters therein which are stated to be alleged on information and belief, and as to those matters, I believe them to be true.

  
James H. Manhardt

Sworn to before me this  
17 day of September 2010

  
Notary Public



# EXHIBIT A

**United States Patent** [19]

Laniado et al.

[11] Patent Number: 4,848,437

[45] Date of Patent: Jul. 18, 1989

[54] SUNBLIND

[76] Inventors: Josephe Laniado, 3/3 Mishol  
Haadmonit Street; Moshe Har-El,  
6/1 Shaul Hamelech Street, both of  
Jerusalem, Israel

[21] Appl. No.: 4,342

[22] Filed: Jan. 16, 1987

[30] Foreign Application Priority Data

Jan. 24, 1986 [IL] Israel 77697

[51] Int. Cl.<sup>4</sup> A47H 5/00[52] U.S. Cl. 160/370.2; 160/238;  
428/476.1; 428/906

[58] Field of Search 160/368 S, DIG. 3, DIG. 2,  
160/DIG. 7, 238, 120, 121 R, 122, 23 R; 296/97  
R, 97 A, 97 G, 97 J, 97 F, 95 R, 95 Q, 95 C;  
428/476.1, 906

[56] References Cited

## U.S. PATENT DOCUMENTS

2,826,523 3/1958 Blaszkowski et al. 160/238 X  
3,236,290 2/1966 Lueder 160/241

4,202,396 5/1980 Levy 160/107  
4,433,711 2/1984 Lew 160/120  
4,615,922 10/1986 Newsome et al. 428/476.1 X  
4,671,558 6/1987 Cline 296/97 R

## FOREIGN PATENT DOCUMENTS

1955584 5/1971 Fed. Rep. of Germany 296/95 Q  
42766 7/1973 Israel

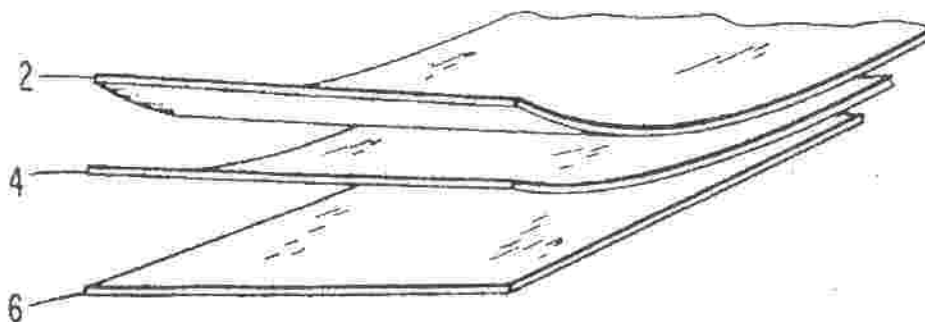
Primary Examiner—Blair M. Johnson

Attorney, Agent, or Firm—Lowe, Price, LeBlanc,  
Becker & Shur

[57] ABSTRACT

The invention provides a sunblind comprising a sheet of rollable fibrous or plastic material capable of alternating between a relaxed and a tensioned state. The sunblind material is pretreated to inherently assume a rolled up configuration in its relaxed state. The blind contains material which interferes with at least a substantial portion of solar radiation impinging thereon in its tensioned unrolled state.

15 Claims, 1 Drawing Sheet

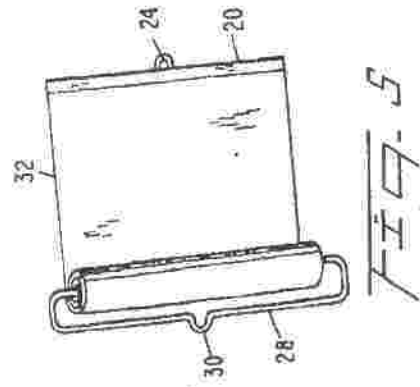
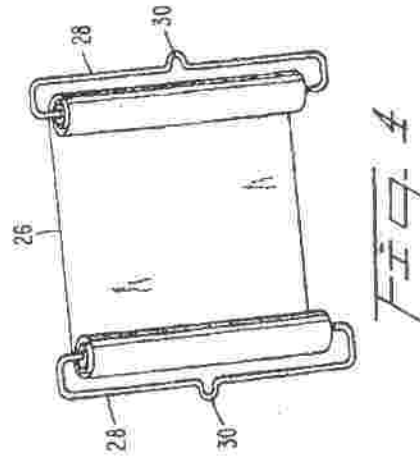
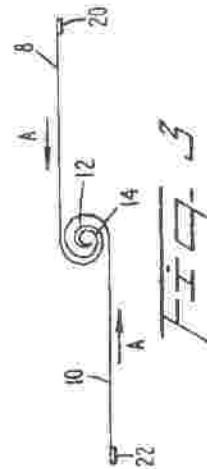
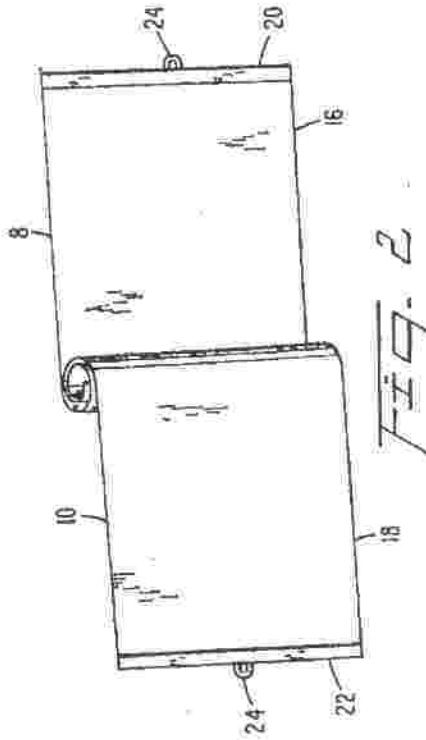
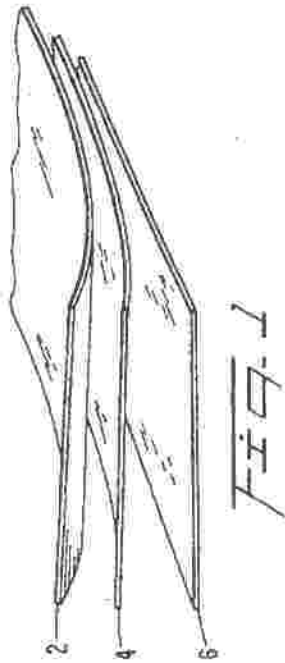




U.S. Patent

Jul. 18, 1989

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## SUNBLIND

## BACKGROUND OF THE INVENTION FIELD OF THE INVENTION

The present invention relates to a sunblind. More particularly the present invention relates to a sunshade or sunblind adapted for attachment across a window surface and especially to a sunblind for protecting the interior of a motor-vehicle against sun rays and glare and to a specially prepared sheet material for use therein.

## DESCRIPTION OF THE BACKGROUND

As described in Israel Pat. No. 42796 and U.S. Pat. No. 4,202,396, the state of the art of sunshades for motorcars before said patents generally fell into two main categories: Outdoor and indoor. The outdoor devices were comprised of an arcuate semi-transparent member mounted above the upper portion of the front window. These devices filter and shade part of a interior of the car only when the sun is at the higher part of its orbit.

The indoor means were either curtains or venetian blinds which were permanently affixed to the side or rear window frames. Alternatively, for the protection of front window, plain flat sheets of any rigid material were used which were dimensioned that they could be placed on the dashboard cover.

Israel Pat. No. 42796 and U.S. Pat. No. 4,202,396 changed the state of the art by providing a foldable sunblind for motor-car windows characterised by a self-contained unit adapted to assume either a stretched position forming a substantially continuous partition detachably mountable at the inner side of said windows, or a collapsed position, forming box-like package said unit comprised a series of planar rectangular board elements foldably jointed to each other along their longitudinal edges. At least two flaps were integrally provided with two space elements adapting the said partitions to be appended from a fitting of the motorcar.

Said sunblinds are today by far the most popular and widely sold of the various types now on the market. However, they suffer from several major disadvantages.

Firstly, the folding and unfolding process is tedious due to the fact that the sunshade with its rigid joined panels is cumbersome since each panel measures about 60 cm x 13 cm and each shade contains about ten such panels.

Secondly, even in its folded state said sunshade occupies substantial space on the floor of a car when not in use and is constantly getting underfoot and in the way. Moreover, the folded blind is to be held together by a rubber band which is frequently easily lost.

For several years there has also been available on the market a sunblind formed of a sheet of thin rollable plastic laminated with a thin sheet of aluminum foil and provided at its ends with means for attachment across a car window surface.

While such a shade is much more compact in its rolled state than the box-like package of joined rectangular panels, the rolling and unrolling thereof is also time-consuming and annoying.

With this state of the art in mind and especially in light of the widespread need for sunshades which would protect the interiors of motor vehicles from the sun's heat and harmful bleaching rays and the aforementioned dissatisfaction with the disadvantages of the

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presently marketed products, there is now provided a new type of sunblind which ameliorates the above problems and provides a much more convenient and easy to use and store sunblind than those that have been heretofore available.

## SUMMARY OF THE INVENTION

Thus according to the present invention there is now provided a sunblind comprising a sheet of rollable fibrous or plastic material capable of alternating between a relaxed and a tensioned state and pretreated to inherently assume a rolled-up configuration in said relaxed state, said blind containing material interfering with at least a substantial portion of solar radiation impinging thereon in said tensioned unrolled state.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

In a first embodiment of the present invention, said sheet comprises a layer of rolled cardboard imparted with an internal structure which inherently causes it to assume said rolled up configuration in its relaxed state.

In a second embodiment of the present invention said sheet comprises a layer of rolled polyethylene imparted with an internal structure which inherently causes it to assume said rolled up configuration in its relaxed state.

In especially preferred embodiments of the present invention there is provided a sunblind comprising a multilayered plastic sheet having at least two layers of plastic material joined to each other at states of different relative stretch, said blind comprising means for attachment of the ends thereof across a window surface wherein upon release of at least one of the ends of said sheet, said sheet will spontaneously roll up upon itself as a result of the different states of stretch of the respective layers.

In said preferred multilayer sunblind said sheet can be made of a layer of polyethylene joined to a layer of nylon which materials have different states of stretch and which sheet can be preferably formed of co-extruded layers of polyethylene and nylon the ratio of polyethylene to nylon in said layers being between about 90:10 and 70:30 and preferably being about 80:20.

Alternatively, said multilayer sheet preferably comprises two layers of polyethylene plastic material joined to each other while in different states of relative stretch.

Preferably said sheets also comprise a layer of reflecting material for reflecting at least part of the solar radiation impinging therein and especially preferred is a pretensioned, inherently self-rolling sheet according to the present invention having a layer of reflective aluminum foil incorporated therein.

Said multilayered sheet can also be prepared using a layer of shrinkable PVC which can be attached to a layer of another material such as heavy duty paper or aluminum foil and then heat shrunk.

While the sunblinds according to the present invention can be made to roll up around a fixed rigid support provided at one or at both of its ends in a scroll like fashion, in preferred embodiments of the present invention said blind roll up around an axis established at some midpoint between its edges as described and explained more fully hereinafter.

Thus in one preferred embodiment of the present invention there is provided a selfrolling sunblind according to the present invention comprising two sheets concentrically and substantially coextensively inter-



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rolled with one edge of a first sheet joined to an aligned edge of a second sheet said joined edges serving substantially as the axis around which said blind rolls up in said relaxed state, the respective unjoined ends of said sheets being provided with means for attachment across a window surface.

The present invention also provides such a sunblind in combination with a window of a motor vehicle.

Alternatively, there is provided a self rolling sunblind according to the present invention wherein said sheet is provided with a fold line across one of the axes thereof, said fold line dividing said sheet into two concentrically and substantially coextensively interrolled portions, said fold line serving substantially as the axis around which said blind portions roll up in said relaxed state.

The invention will now be described in connection with certain preferred embodiments with reference to the following illustrative figures so that it may be more fully understood.

With specific reference now to the figures in detail, it is stressed that the particulars shown are by way of example and for purposes of illustrative discussion of the preferred embodiments of the present invention only and are presented in the cause of providing what is believed to be the most useful and readily understood description of the principles and conceptual aspects of the invention. In this regard, no attempt is made to show structural details of the invention in more detail than is necessary for a fundamental understanding of the invention, the description taken with the drawings making apparent to those skilled in the art how the several forms of the invention may be embodied in practice.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic representation of a three layered pretensioned laminar sheet from which a preferred blind of the present invention is formed.

FIG. 2 is a schematic perspective view of a sunblind in its unrolled state.

FIG. 3 is a cross-sectional view of FIG. 2.

FIG. 4 is a further embodiment of a blind according to the invention partly rolled up on both of its lateral sides.

FIG. 5 is another embodiment of a blind according to the invention partly rolled up at one of its lateral sides.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS IN RELATION TO THE DRAWINGS

In FIG. 1, there is schematically shown a portion of a sunblind according to the present invention in its tensioned unrolled configuration. This blind is composed of a first sheet of polyethylene terephthalate 2 laminated to a second sheet of aluminum foil 4 which is in turn laminated to a third stretched sheet of polyethylene terephthalate 6. (see, Example 2 below) As explained hereinbefore, due to the different states of stretch of the respective layers, the blind will inherently and spontaneously roll up upon itself when not secured in a tensioned unrolled configuration.

In FIGS. 2 and 3 there is schematically shown an especially preferred embodiment of the present invention in which two pretensioned sunblind sheets 8, 10 according to the present invention are joined together by the welding of one edge 12 of a first sheet 8 to an aligned edge 14 of the second sheet 10. This welding is attained in an arrangement whereby due to the internal tension of each sheet they will concentrically roll

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around each other, with said joined edges 12 and 14 serving substantially as the axis around which said blind rolls up in its relaxed state.

The two unjoined ends 16, 18 of said sheets are each attached to a PVC rigidifying strip 20, 22 provided with apertures 24 attachable to hooks (not shown) affixed to both ends of the window to be covered.

The thus prepared blind, when released, spontaneously rolls up upon itself in the direction of arrows A as a result of the different states of stretching of the pretensioned sheets of the present invention.

It will be realized that instead of joining edges 12 and 14 of two separate sheets 8 and 10 as shown, the same effect can be achieved by using a press to form a permanent fold line in a single sheet at the area where edges 12 and 14 are shown as joined in FIG. 3.

In FIG. 4, there is illustrated another embodiment of the present invention in which a pretensioned sunblind sheet 26 according to the present invention is attached at both of its ends to a bow-like holder 28. Said holders are provided with eyelets 30 for attachment to hooks (not shown) affixed to both ends of the window to be covered.

Similarly, in FIG. 5 there is illustrated a pretensioned sun blind sheet 32 which rolls up around a single bow-like holder 28 and is provided at its other end with a rigidifying strip 20 provided with an aperture 24 and attachable as described with reference to FIGS. 2-4.

In light of the above description it should be realized that in its broadest aspect the present invention also provides a sheet of rollable fibrous or plastic material capable of alternating between a relaxed and a tensioned state and pretreated to inherently assume a rolled-up configuration in said relaxed state which can have other uses as well such as serving as the basis for a self rolling map.

While the invention will now be described in connection with certain preferred embodiments in the following examples so that aspects thereof may be more fully understood and appreciated, it is not intended to limit the invention to these particular embodiments. On the contrary, it is intended to cover all alternatives, modifications and equivalents as may be included within the scope of the invention as defined by the appended claims. Thus, the following examples which include preferred embodiments will serve to illustrate the practice of this invention, it being understood that the particulars shown are by way of example and for purposes of illustrative discussion of preferred embodiments of the present invention only and are presented in the cause of providing what is believed to be the most useful and readily understood description of preparation procedures as well as of the principles and conceptual aspects of the invention.

#### EXAMPLES

##### Example 1

##### Cardboard Sunblind

A corrugated cardboard 45 cm in length and 2 mm in thickness having two outer smooth layers and an inner wavy layer is soaked in water and then tightly rolled to form a cylinder having a diameter of about 2 cm.

The tightly wound cylindrical shape is maintained by wrapping with rubber bands or cords and the rolled cardboard is then dried in an oven at 40° C. for one hour.



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After drying and removing the restraining ties the cardboard is capable of alternating between a relaxed, rolledup configuration and a tensioned, unrolled configuration.

The lateral edges of the cardboard strip are then provided with rigidifying strips having suction cups at the ends thereof, whereby in its unrolled configuration it is attachable to a window surface as a sunblind therefore. Alternatively said sheet is provided with attachment means as shown in FIGS. 4 or 5.

In this embodiment the fibrous material or the cardboard serves impart to the blind its sun reflecting property.

#### Example 2

##### Polyethylene Sunblind with Aluminum Foil Sunblock

A sheet of polyethylene terephthalate 25 microns thick, is glued to a sheet of 12 micron thick aluminum foil in a laminating machine (Faustel, Butler Wisconsin) to form a first composite sheet.

A second sheet of polyethylene terephthalate, 50 microns thick, is stretched 10% in an oven at 225° C. This stretched sheet is then glued to the aluminum foil side of said first composite sheet in said laminating machine to form a second composite sheet.

Said second composite sheet is rolled on a spool and dried at room temperature for 48 hours with the second sheet of polyethylene material on the inside.

After drying, the sheet is cut into smaller sheets measuring 45 by 60 cm, two such smaller sheets are superposed and one edge of a first sheet is heat welded to an aligned edge of a second sheet.

The jointed sheets spontaneously concentrically roll up upon themselves with said welded end serving substantially as the axis around which said sheets roll up.

In order to assure that this inherent property of spontaneous rolling up is retained even after prolonged exposure to sunlight and heat, the rolled up blind is introduced into a plastic bag, the air removed therefrom by vacuum to limit ozonization and the blind is subjected to 5,000,000 units of radiation from a Cobalt 60 irradiator.

#### Example 3

##### Polyethylene and Nylon Coextended Sunblind with Pigment as Sunblock

Polyethylene granules intermixed with white pigment and nylon granules are separately fed to the inlets of a co-extruder in relative proportions of 80% polyethylene to 20% nylon to form a continuous sleeve 30 cm wide, with the nylon on the outside and the polyethylene on the inside.

Said sleeve is cut into lengths of 45 cm each. Said cut sleeves are then cut along their length to form a sheet 100 by 45 cm which immediately upon cutting, spontaneously rolls upon itself with the nylon on the inside and the polyethylene on the outside due to the difference in the states of stretch of the nylon and polyethylene layers.

Said sheet can then be cut into two sheets, superposed and welding along an aligned edge as described in example 2 or attached to and wound around one or more support as shown in FIGS. 4 and 5.

In order to assure that this inherent property of spontaneous rolling up is retained even after prolonged exposure to sunlight and heat the rolled up blind is introduced into a plastic bag, the air removed therefrom by

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vacuum to limit ozonization and the blind is subjected to 5,000,000 units of radiation from a Cobalt 60 irradiator.

In this embodiment the pigment incorporated in the polyethylene layer serves to impart to the blind its sun reflecting property.

It will be evident to those skilled in the art that the invention is not limited to the details of the foregoing illustrative embodiments and that the present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed is:

1. The sunblind for protecting the interior of a motor vehicle against sun rays and glare comprising a multi-layer plastic sheet of rollable material comprising at least two layers of material joined to one another at states of different relative stretch, said sheet being capable of alternating between a relaxed and a tensioned state and pretreated to inherently assume a rolledup configuration around an axis in said relaxed state as a result of the different states of stretch of the layers, and being further pretreated to retain said inherent property of spontaneous rolling up even after prolonged exposure to sunlight and the heat generated in the interior of a closed motor vehicle exposed to sunlight, said blind containing material interfacing with at least a substantial portion of solar radiation impinging thereon in said tensioned unrolled state, and, said blind further comprising means for attachment of the ends thereof across a window surface wherein upon release of at least one of the ends of said sheet, said sheet will spontaneously rollup upon itself as a result of the different states of stretch of the respective layers.
2. The sunblind of claim 1 wherein said plastic sheet comprises a layer of rolled polyethylene material imparted with an internal structure which inherently causes it to assume said rolled up configuration in its relaxed state.
3. The sunblind of claim 1, further comprising a layer of reflecting material for reflecting at least part of the solar radiation impinging thereon.
4. The sunblind of claim 3, wherein said reflective material is a layer of aluminum foil.
5. The sunblind of claim 1, wherein said plastic sheet comprises a layer of polyethylene joined to a layer of nylon.
6. The sunblind of claim 5, wherein said plastic sheet is formed of co-extruded layers of polyethylene and nylon in a ratio thereof of about 90:10 to 70:30.
7. The sunblind of claim 1, wherein said plastic sheet comprises two layers of a polyethylene plastic material joined to one another while in different states of relative stretch.
8. The sunblind of claim 1, wherein said plastic sheet comprises two plastic sheets concentrically and substantially coextensively inter-rolled with one another at respectively aligned edges thereof, said inter-rolled edges serving substantially as the axis around which said blind rolls

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up in said relaxed state; the respective unjoined ends of said sheets opposite the inter-rolled ends being provided with said means for attachment across said window surface.

9. The sunblind of claim 1, wherein

said plastic sheet is provided with a fold line across an axis thereof, said fold line dividing said sheet into two concentrically and substantially coextensively inter-rolled portions thereof and substantially serving as the axis around which said sheet portions roll up in said relaxed state.

10. The sunblind of claim 1 in combination with a windshield of a motor vehicle.

11. A multilayer plastic sheet of rollable material comprising at least two layers of material joined to one another at states of different relative stretch and capable of alternating between a relaxed and a tensioned state and pretreated to inherently assume a rolled-up configuration in said relaxed state as a result of the different

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states of stretch of the respective layers and being further pretreated to retain said inherent property of spontaneous rolling up even after prolonged exposure to sunlight and the maximum heat generated in the interior of a closed motor vehicle exposed to sunlight.

12. The sheet of claim 11 comprising a layer of rolled polyethylene material imparted with an internal structure which inherently causes it to assume said rolled up configuration in its relaxed state.

13. The sheet of claim 11 comprising a layer of polyethylene joined to a layer of nylon.

14. The sheet of claim 11 comprising two layers of a polyethylene plastic material joined to one another while in different states of relative stretch.

15. The sheet of claim 11, further comprising a layer of reflecting material for reflecting at least part of the solar radiation impinging thereon.

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# EXHIBIT B





US005176774A

## United States Patent [19]

Laniado et al.

[11] Patent Number: 5,176,774

[45] Date of Patent: Jan. 5, 1993

[54] PROCESSES FOR MANUFACTURING  
MULTILAYER PLASTIC SHEET[75] Inventors: Josephe Laniado; Moshe Har-El,  
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[73] Assignee: Roll Screens, Inc., Hockessin, Del.

[21] Appl. No.: 645,765

[22] Filed: Jan. 25, 1991

## Related U.S. Application Data

[63] Continuation of Ser. No. 269,176, Nov. 9, 1988, and a  
continuation-in-part of Ser. No. 4,342, Jan. 16, 1987.

## [30] Foreign Application Priority Data

Jan. 24, 1986 [IL] Israel ..... 77697

[51] Int. Cl.<sup>3</sup> ..... B31C 13/00[52] U.S. Cl. .... 156/162; 135/117;  
156/85; 156/160; 156/229; 264/288.8[58] Field of Search ..... 156/162, 160, 229, 163,  
156/84, 85; 264/288.8; 135/117

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Primary Examiner—David A. Simmons

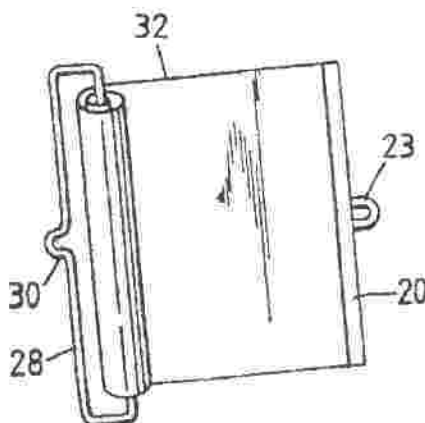
Assistant Examiner—Merrick Dixon

Attorney, Agent, or Firm—Viviana Amzel

## [57] ABSTRACT

The invention provides a multilayer plastic sheet of self-rollable material comprising at least two layers of material joined to one another at states of different relative stretch and capable of alternating between a relaxed and a tensioned state and of inherently assuming a rolled-up configuration in said relaxed state as a result of the different states of stretch of the respective layers and to retain said inherent property of spontaneous rolling up even after prolonged exposure to sunlight and heat. The invention also provides a process for preparing a rollable sheet containing at least one layer of laminatable plastic material, said sheet being capable of alternating between a relaxed and a tensioned state and of inherently assuming a rolled up configuration in said relaxed state and retaining said inherent property of spontaneous rolling up even after prolonged exposure to sunlight and heat, said process comprising heating and stretching a first sheet of plastic material and laminating said first sheet of prestretched plastic material to a second sheet of non-stretched material, to form a self-rollable composite sheet.

10 Claims, 1 Drawing Sheet



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## PROCESSES FOR MANUFACTURING MULTILAYER PLASTIC SHEET

The present specification is a continuation of Ser. No. 269,176, filed Nov. 9, 1988 and a continuation-in-part of U.S. Ser. No. 004,342 filed Jan. 16, 1987.

The present invention relates to a multilayer plastic sheet of rollable material and to a process for the preparation thereof. More particularly the present invention relates to a sunshade or sunblind adapted for attachment across a vehicle window surface for protecting the interior of a motor-vehicle against sun rays and glare, to specially prepared sheet materials for use therein and to processes for the preparation of these sheets.

As described in U.S. Pat. No. 4,202,396 the state of the art of sunshades for motorcars before said patents generally fell into two main categories: Outdoor and indoor. The outdoor devices were comprised of an arcuate semi-transparent member mounted above the upper portion of the front window. These devices filter and shade part of the interior of a car only when the sun is at the higher part of its orbit.

The indoor means were either curtains or venetian blinds which were permanently affixed to the side or rear window frames. Alternatively, for the protection of front window, plain flat sheets of any rigid material were used which were dimensioned so that they could be placed on the dashboard cover.

U.S. Pat. No. 4,202,396, however, changed the state of the art by providing a foldable sunblind for motor-car windows characterized by a self-contained unit adapted to assume either a stretched position, forming a substantially continuous partition detachably mountable at the inner side of said windows, or a collapsed position, forming a box-like package. Said unit comprised of a series of planar rectangular board elements foldably joined to each other along their longitudinal edges. At least two flaps were integrally provided with two spaced elements adapting the said partitions to be appended from a fitting of the motorcar.

Said sunblinds are today by far the most popular and widely sold of the various types now on the market. However, they suffer from several major disadvantages.

Firstly, the folding and unfolding process is tedious due to the fact that the sunshade with its rigid joined panels is cumbersome, since each panel measures about 60 cm x 13 cm and each shade contains about ten such panels.

Secondly, even in its folded state, said sunshade occupies substantial space on the floor of a car when not in use and is constantly getting under foot and in the way. Moreover, the folded blind is to be held together by a rubber band which is frequently easily lost.

For several years there has also been available on the market a sunblind formed of a sheet of thin rollable plastic laminated with a thin sheet of aluminum foil and provided at its ends with means for attachment across a car window surface as described e.g. in German Offenlegungsschrift 1955584.

While such a shade is much more compact in its rolled state than the box-like package of joined rectangular panels, the rolling and unrolling thereof is also time-consuming and annoying or else is based on the attachment of one end of said sheet to an expensive steel coil spring mechanism.

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With this state of the art in mind and especially in light of the widespread need for sunshades which would protect the interiors of motor vehicles from the sun's heat and harmful bleaching rays and the aforementioned dissatisfaction with the disadvantages of the presently marketed products, there is now provided a process for preparing a new type of sunblind which ameliorates the above problems and provides a much more convenient and easy to use and store sunblind than those that have been heretofore available.

Thus according to the present invention there is now provided a process for preparing a self-rollable sheet containing at least one layer of laminatable plastic material said sheet being capable of alternating between a relaxed and a tensioned state and of inherently assuming a rolled up configuration in said relaxed state and retaining said inherent property of spontaneous rolling up even after prolonged exposure to sunlight and heat, said process comprising heating and stretching a first sheet of plastic material and laminating said first sheet of prestretched plastic material to a second sheet of non-stretched material, to form a self-rolling composite sheet.

The invention also provides a multilayer plastic sheet of self-rollable material comprising at least two layer of material joined to one another at states of different relative stretch and capable of alternating between a relaxed and a tensioned state and of inherently assuming a rolled-up configuration in said relaxed state as a result of the different states of stretch of the respective layers and to retain said inherent property of spontaneous rolling up even after prolonged exposure to sunlight and heat.

In its preferred embodiments the present invention provides a sun blind for protecting the interior of a motor vehicle against sun rays and glare comprising a multi-layer plastic sheet of self-rollable material comprising at least two layers of material joined to one another at states of different relative stretch, said sheet being capable of alternating between a relaxed and a tensioned state and of inherently assuming a rolled-up configuration around an axis in said relaxed state as a result of the different states of stretch of the layers, and to retain said inherent property of spontaneous rolling up even after prolonged exposure to sunlight and the heat generated in the interior of a closed motor vehicle exposed to sunlight, said blind containing material interfering with at least a substantial portion of solar radiation impinging thereon in said tensioned unrolled state, and, said blind further comprising means for attachment of the ends thereof across a window surface wherein upon release of at least one of the ends of said sheet, said sheet will spontaneously roll up upon itself as a result of the different states of stretch of the respective layers.

Preferably said layer is a plastic material selected from polyethylene, polyethylene terephthalate, polypropylene, Mylar® and nylon.

As will be realized after studying the examples hereinafter, the self-rolling multilayer sheets of the present invention can be prepared in different ways applying the principles of manufacture taught herein.

In general a first sheet of laminatable plastic material is passed over a first glue applying set of rollers of a laminating machine and passed through the oven thereof at a temperature which can vary e.g. between 100° C. and 200° C. and at a speed which can vary e.g. between about 80 m/min to about 120 m/min depending on the plastic used, the length of the oven and the



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relationship retained between the speed and temperature.

The speed of the take-up laminating rollers and the feed glue applying rollers are adjusted relative to each other to create a stretch of the sheet in the oven of about 4 to 15%.

The stretched sheet is then laminated to a relatively non-stretched second sheet of material and due to the different states of stretch of the respective layers, the formed composite sheet will spontaneously roll-up upon itself.

To augment this self-rolling effect and to cause a tightening of the roll the composite sheet is irradiated, heated and/or exposed to moisture to effect a softening of said second sheet and/or a cross-linking of the material therein.

In preferred multilayer sunblind said sheet can alternatively be made of a layer of polyethylene terephthalate joined to a layer of nylon or of polypropylene joined to nylon which materials are laminated under different states of stretch.

Alternatively, said multilayer sheet preferably comprises two layers of polyethylene terephthalate joined to each other while in different states of relative stretch.

In U.S. Pat. No. 2,826,523 there is described a self-rolling tarpaulin or covering made of laminated layers of rubber bonded with a bonding agent or by vulcanization however said covering could not be used as a sunblind for a motor vehicle since it is not sufficiently heat resistant to withstand the heat generated in the interior of a closed motor vehicle exposed to sunlight which heat is known, by black box experiments, to reach as much as 75° C.

Preferably said sheets also comprise a layer of reflecting material for reflecting at least part of the solar radiation impinging therein and especially preferred is a pretensioned, inherently self-rolling sheet according to the present invention having a layer of reflective aluminum incorporated therein.

Said multilayered sheet can also be prepared using a layer of nylon, polyethylene terephthalate or polypropylene which can be tensioned and then attached to a layer of another material such as heavy duty paper or aluminum foil.

While the sunblinds according to the present invention can be made to roll up around a fixed rigid support provided at one or at both of its ends in a scroll like fashion, in preferred embodiments of the present invention said blind will roll up around an axis established at some midpoint between its edges as described and explained more fully hereinafter.

Thus in one preferred embodiment of the present invention there is provided a self-rolling sunblind according to the present invention comprising two sheets concentrically and substantially coextensively inter-rolled with one edge of a first sheet joined to an aligned edge of a second sheet, said joined edges serving substantially as the axis around which said blind rolls up in said relaxed state, the respective unjoined ends of said sheets being provided with means for attachment across a window surface.

In especially preferred embodiments of the present invention the self-rolling property of the sheets themselves is utilized to eliminate the need for a separate rigid support for each of the unjoined ends of said sheets, each of said ends being rolled tightly about itself to form a substantially rigid column to which is affixed attachment means provided, e.g. with eyelets for attachment

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to hooks affixed e.g. by suction cups to both ends of the window to be covered.

The present invention also provides a such a sunblind whenever in combination with a window of a motor vehicle.

Alternatively there is provided a self rolling sunblind according to the present invention wherein said sheet is provided with a fold line across one of the axis thereof, said fold line dividing said sheet into two concentrically and substantially coextensively interrolled portions, said fold line serving substantially as the axis around which said blind portions roll up in said relaxed state.

As will be realized, the self-rolling sheets of the present invention can be used not only for sun blinds but also for the preparation of awnings, shades and even tents wherein the inherent property of spontaneous rolling up even after prolonged exposure to sunlight and heat as well as the property of ready compact storage are advantageous.

The invention will now be described in connection with certain preferred embodiments with reference to the following illustrative figures so that it may be more fully understood.

With specific reference now to the figures in detail, it is stressed that the particulars shown are by way of example and for purposes of illustrative discussion of the preferred embodiments of the present invention only and are presented in the cause of providing what is believed to be the most useful and readily understood description of the principles and conceptual aspects of the invention. In this regard, no attempt is made to show structural details of the invention in more detail than is necessary for a fundamental understanding of the invention, the description taken with the drawings making apparent to those skilled in the art how the several forms of the invention may be embodied in practice.

In the drawings:

FIG. 1 is a schematic representation of a three layered pretensioned laminar sheet from which a preferred blind of the present invention is formed;

FIG. 2 is a schematic perspective view of a sunblind in its unrolled state;

FIG. 3 is a cross-sectional view of FIG. 2;

FIG. 4 is a further embodiment of a blind according to the invention partly rolled up, on both of its lateral sides; and

FIG. 5 is another embodiment of a blind according to the invention partly rolled up at one of its lateral sides.

In FIG. 1 there is schematically shown a portion of a sunblind according to the present invention in its tensioned unrolled configuration. This blind is composed of a first sheet of medium density polyethylene 2 laminated to a second sheet of aluminum foil 4 which is in turn laminated to a third stretched sheet of medium density polyethylene 6 (see example 1 hereinafter). As explained hereinbefore, due to the different states of stretch of the respective layers the blind will inherently and spontaneously roll up upon itself when not secured in a tensioned unrolled configuration.

In FIGS. 2 and 3 there is schematically shown an especially preferred embodiment of the present invention in which two pretensioned sunblind sheets 8, 10 according to the present invention are joined together by the welding of one edge 12 of a first sheet 8 to an aligned edge 14 of the second sheet 10 in an arrangement whereby due to the internal tension of each sheet they will concentrically roll around each other, with



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said joined edges 12 and 14 serving substantially as the axis around which said blind rolls up in its relaxed state.

The two unjoined ends 16, 18 of said sheets are each rolled about themselves to form a coreless substantially rigid column 20, 22 to which are affixed attachment means 23 provided with apertures 24 releasably attachable to hooks (not shown) affixed to both ends of the window to be covered.

The thus prepared blind when released spontaneously rolls up upon itself in the direction of arrows A as a result of the different states of stretching of the pretensioned sheets of the present invention.

It will be realized that instead of joining edges 12 and 14 of two separate sheets 8 and 10 as shown, the same effect can be achieved by using a press to form a permanent fold line in a single sheet at the area where edges 12 and 14 are shown as joined in FIG. 3.

In FIG. 4, there is illustrated another embodiment of the present invention in which a predetermined sun-blind sheet 26 according to the present invention is attached at both of its ends to a bow-like holder 28. Said holders are provided with eyelets 30 for attachment to hooks (not shown) affixed to both ends of the window to be covered.

Similarly, in FIG. 5 there is illustrated a pretensioned sun blind sheet 32 which rolls up around a single bow-line holder 28, the free end of which is rolled upon itself to form a coreless substantially rigid column to which is affixed attachment means 23 provided with an aperture 24 and attachable as described with reference to FIGS. 2-4.

As will be realized, embodiment of FIGS. 2 and 3 is especially preferred since said first preferred embodiment requires no parts except for the sheet itself and attachment clips 23 as the sheet itself acts as its own axis and its own rigidifying end-strip.

While the invention will now be described in connection with certain preferred embodiments in the following examples so that aspects thereof may be more fully understood and appreciated, it is not intended to limit the invention to these particular embodiments. On the contrary, it is intended to cover all alternatives, modifications and equivalents as may be included within the scope of the invention as defined by the appended claims. Thus, the following examples which include preferred embodiments will serve to illustrate the practice of this invention, it being understood that the particulars shown are by way of example and for purposes of illustrative discussion of preferred embodiments of the present invention only and are presented in the cause of providing what is believed to be the most useful and readily understood description of preparation procedures as well as of the principles and conceptual aspects of the invention.

#### EXAMPLE 1

A sheet of medium density polyethylene 50 microns thick, is glued to a sheet of 12 microns thick aluminum foil in a laminating machine (Faustel, Butler Wis.) to form a first composite sheet.

A second sheet of polyethylene, 25 microns thick, is stretched 10% in an oven at 125° C. and then glued to the aluminum foil side of said first composite sheet in said laminating machine to form a second composite sheet.

Said second composite sheet is rolled on a spool and cured at room temperature for 48 hours with the second sheet of polyethylene material on the inside.

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After curing, the sheet is cut into smaller sheets measuring 45 by 60 cm, two such smaller sheets are superposed and one edge of a first sheet is heat welded to an aligned edge of a second sheet.

The joined sheets spontaneously concentrically roll up upon themselves with said welded end serving substantially as the axis around which said sheets roll up.

In order to assure that this inherent property of spontaneous rolling up is retained even after prolonged exposure to sunlight and heat the rolled up blind is introduced into a plastic bag, the air removed therefrom by vacuum to limited ozonization and the blind is subjected to 5,000,000 units of radiation from a Cobalt 60 irradiator to effect cross-linking of the polyethylene.

#### EXAMPLE 2

A transparent sheet of polyethylene terephthalate 12 microns thick is covered with a layer of aluminum having a thickness sufficient to make it completely opaque said layer being deposited using a vaporizing process in vacuum.

Said sheet is passed over a first glue applying set of rollers of a laminating machine and passed through a 6 meter oven thereof at a temperature of 120°. At the outlet of the oven, a second set of laminating rollers is adjusted to a speed of 120 m/min while the aforementioned glue applying rollers are adjusted to a slower speed to create a 6% stretch along the sheet between the two sets of rollers.

A second sheet of polyethylene terephthalate 50 microns thick is also fed to said laminating rollers wherein said first stretched sheet and said second sheet are glued and laminated to each other to form a composite sheet. Said composite sheet is spontaneously self-rolling and in order to assure that this inherent property of spontaneous rolling up is retained even after prolonged exposure to sunlight and heat the rolled up sheet is heated in an oven at 190° C. for 20 minutes to soften said second sheet and tighten the rolled effect of said composite sheet.

The sheet is then cut into smaller sheets measuring 45 by 60 cm, two such smaller sheets are superposed and one edge of a first sheet is heat welded to an aligned edge of a second sheet.

The joined sheets spontaneously concentrically roll up upon themselves with said welded end serving substantially as the axis around which said sheets roll up.

#### EXAMPLE 3

The procedure of example 2 was repeated, however, instead of using a transparent sheet of polyethylene terephthalate covered with aluminum, a polyethylene sheet having gray pigment already incorporated therein was used. A product similar to example 2 was produced.

#### EXAMPLE 4

A transparent sheet of polypropylene 50 microns thick is covered with a layer of aluminum having a thickness sufficient to allow only 20% light transmission therethrough said layer being deposited using a vaporizing process in vacuum.

A second sheet of nylon 12 microns is stretched 10% in an oven of a laminating machine at 140° C. and then glued to the aluminized side of said polypropylene sheet in said laminating machine to form a composite sheet.

Said composite sheet is rolled and then heated in an oven at 50° C. for 30 minutes to soften said polypropyl-



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one sheet and thereby tighten and strengthen the self-rolling property of the sheet.

#### EXAMPLE 5

A transparent sheet of polyethylene terephthalate 12 microns thick is covered with a layer of aluminium having a thickness sufficient to make it completely opaque said layer being deposited using a vaporizing process in vacuum.

Said sheet is passed over a first glue applying set of rollers of a laminating machine and passed through a 6 meter oven thereof at a temperature of 120°. At the outlet of the oven, a second set of laminating rollers is adjusted to a speed of 120 m/min while the aforementioned glue applying rollers are adjusted to a slower speed to create a 6% stretch along the sheet between the two sets of rollers.

A second sheet of 80 gram white paper is also fed to said laminating rollers wherein said first stretched sheet and said second sheet are glued and laminated to each other to form a composite sheet. Said composite sheet is self-rolling and in order to assure that this inherent property of spontaneous rolling up is retained even after prolonged exposure to sunlight and heat the rolled up sheet is placed in a steam chamber for 30 minutes to soften said second sheet and tighten the rolled effect of said composite sheet.

The sheet is then cut into smaller sheets measuring 45 by 60 cm, two such smaller sheets are superposed and one edge of a first sheet is heat welded to an aligned edge of a second sheet.

The joined sheets spontaneously concentrically roll up upon themselves with said welded end serving substantially as the axis around which said sheets roll up.

It will be evident to those skilled in the art that the invention is not limited to the details of the foregoing illustrative embodiments and that the present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed is:

1. A process for preparing a multi-layer self-rollable plastic sheet for protecting the interior of a motor vehicle against sunlight and/or heat containing at least two layers of laminatable plastic material joined to one another at states of different relative stretch, said sheet being capable, upon human prompting, of alternating between a relaxed and a tensioned state and being pretreated to inherently a rolled-up configuration around an axis in said relaxed state as a result of the different states of stretch of the layers and being further pretreated to retain said inherent property of spontaneous rolling up even after prolonged exposure to sunlight and heat, said process comprising

(a) heating and stretching a first sheet of plastic material;

(b) laminating said first sheet of prestretched plastic material to a second sheet of relatively non-stretched plastic material capable of at least partially reflecting sunlight and/or heat to form a self-rollable composite sheet which will roll up along the direc-

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tion of stretch of said first layer, and assume said relaxed state;

(c) allowing the laminated sheet to roll onto itself;

(d) then heating said composite sheet to effect cross-linking of the polymer material, softening of said second sheet and tightening and strengthening of said self-rolling effect upon the cooling of said composite sheet; and

(e) cooling the heated sheet.

2. A process according to claim 1 wherein said layer of plastic material is selected from polyethylene, polyethylene terephthalate, polypropylene, mylar and nylon.

3. A process for preparing a multi-layer self-rollable plastic sheet for protecting the interior of a motor vehicle against sunlight and/or heat containing at least two layers of laminatable plastic material joined to one another at states of different relative stretch, said sheet being capable, upon human prompting of alternating between a relaxed and a tensioned state and being pretreated to inherently assume a rolled up configuration around an axis in said relaxed state as a result of the different states of stretch of the layers and being further pretreated to retain said inherent property of spontaneous rolling up even after prolonged exposure to sunlight and heat, said process comprising

(a) heating and stretching a first layer of plastic material;

(b) laminating a first layer of prestretched plastic material to a second layer of relatively non-stretched plastic material capable of at least partially reflecting sunlight and/or heat or to form a self-rollable composite sheet which will roll up along the direction of stretch of the first layer, and assume said relaxed state;

(c) allowing the laminated sheet to roll onto itself;

(d) subjecting the rolled composite sheet to irradiation to effect cross-linking of the plastic material, softening of the second layer and tightening and strengthening the self-rolling capability of the sheet; and thereafter

(e) cooling the irradiated sheet.

4. The process of claim 3, further comprising depositing on the first or second layers of plastic material a layer of reflecting material capable of reflecting at least part of any solar radiation impinging thereon.

5. The process of claim 3, wherein the first layer is stretched by about 4 to 15% before lamination step.

6. The process of claim 5, wherein the stretching of the first layer is conducted at a temperature of about 100° to 200° C.

7. The process of claim 6, wherein the stretching of the first layer is conducted by passing the first layer through an oven at the stretching temperature at a rate of about 80 to 120 m/min.

8. A process for preparing a self-rollable sheet containing at least a first layer of laminatable plastic material, the sheet being capable of alternating between a relaxed and a tensioned state and of inherently assuming a rolled-up configuration in said relaxed state and retaining said inherent property of spontaneous rolling up even after prolonged exposure to sunlight and heat, the process comprising:

(a) heating and stretching the first layer of plastic material;

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5,176,774

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(b) laminating the first layer of prestretched plastic material to a second sheet of paper material to form a self-rollable composite sheet which will roll up along the direction of stretch of the first layer when assuming the relaxed state;

(c) moistening the composite sheet to effect a softening of the paper material; and

(d) cooling the composite sheet to effect a tightening of the rolling effect.

9. In a process of preparing a multi-layer self-rollable plastic sheet containing at least two layers of laminatable plastic material joined to one another at states of different relative stretch said sheet being capable, upon human prompting, of alternating between a relaxed and a tensioned state and being pretreated to inherently assume a rolled up configuration around an axis in said relaxed state as a result of the different states of stretch of the layers and being further pretreated to retain said inherent property of spontaneous rolling-up even after prolonged exposure to sunlight and heat, the process comprising heating and stretching a first sheet of plastic material, laminating the first sheet of prestretched plastic material to a second sheet of relatively non-stretched plastic material to form a self-rollable composite sheet which will roll up along the direction of stretch of the first sheet and assume the relaxed state allowing the laminated sheet to roll onto itself, and cooling the heated sheet to effect a tightening of the rolling effect of the composite sheet, the improvement comprising

subjecting the rolled-up composite sheet to heating to effect cross-linking of the polymer material, softening of the second layer and tightening and further strengthening the self-rolling capability of the sheet.

10. In a process of preparing a multi-layer self-rollable plastic sheet containing at least two layers of laminatable plastic material joined to one another at states of different relative stretch said sheet being capable, upon human prompting, of alternating between a relaxed and a tensioned state and being pretreated to inherently assume a rolled-up configuration around an axis in said relaxed state as a result of the different states of stretch of the layers and being further pretreated to retain said inherent property of spontaneous rolling-up even after prolonged exposure to sunlight and heat, the process comprising heating and stretching a first sheet of plastic material, laminating the first sheet of prestretched plastic material to a second sheet of relatively non-stretched plastic material to form a self-rollable composite sheet which will roll-up along the direction of stretch of the first sheet and assume the relaxed state allowing the laminated sheet to roll onto itself, and cooling the heated sheet to effect a tightening of the rolling effect of the composite sheet, the improvement comprising subjecting the rolled-up composite sheet to irradiation to effect cross-linking of the polymer material, softening of the second layer and tightening and further strengthening the rolling capability of the sheet.

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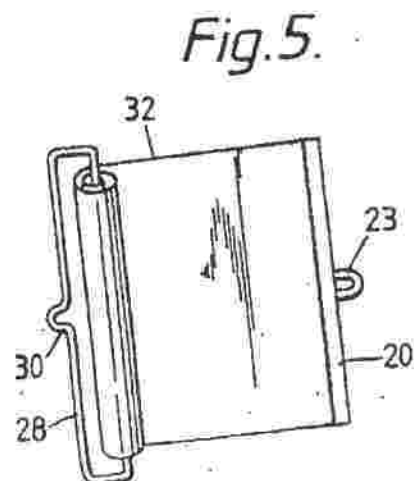
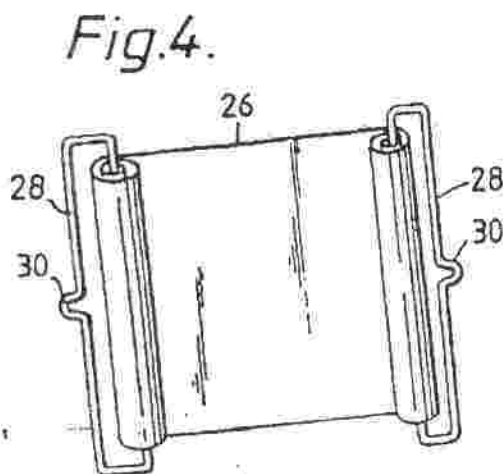
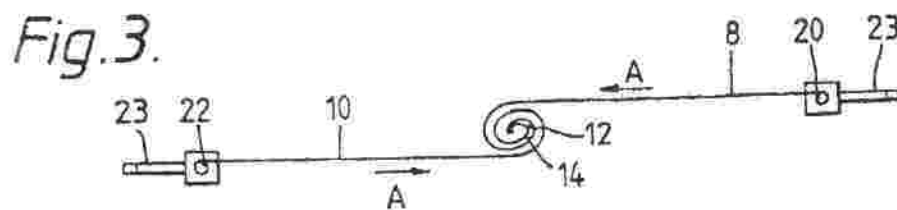
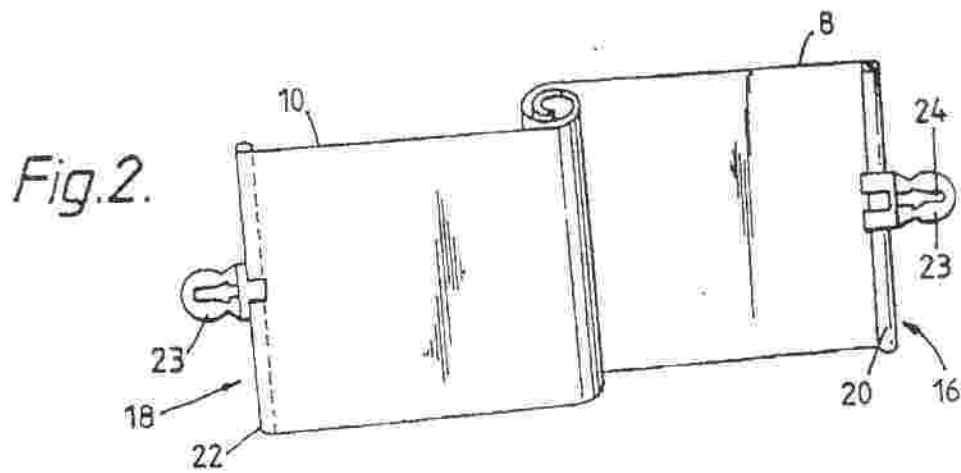
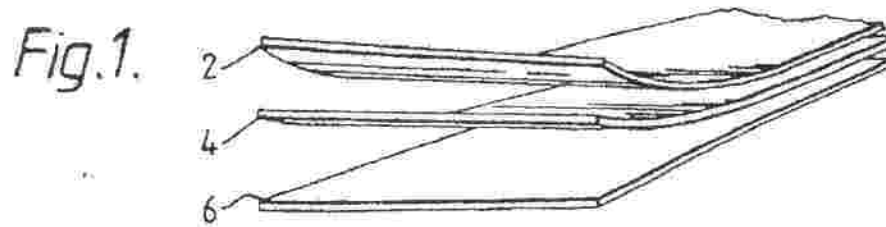
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U.S. Patent

Jan. 5, 1993

5,176,774



# EXHIBIT C

UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF NEW YORK

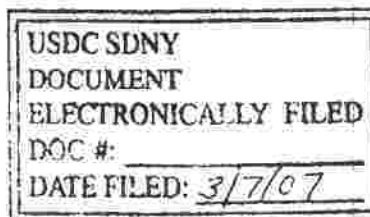
BANA HOLDINGS, USA, INC.,

Plaintiff,

-against-

ARGO DEVELOPMENT & PRODUCTION LTD.,  
MOSHE HAR-EL,  
JOSEPH LANIANDO and  
ROLL SCREENS, INC.,

Defendants.



Case No. 04 CV 7200 (LMM)

**ORDER**

A hearing having been held and a resulting Bench Order having been entered by this Court on March 1, 2007, on an order to show cause filed by defendants Argo Development & Production Ltd. and Moshe Har-el ("the Defendants"), the Court having reviewed the Defendants' supporting papers, and plaintiff Bana Holdings, USA, Inc. ("the Plaintiff") having failed to appear or oppose the relief being sought, it is hereby ORDERED, consistent with this Court's prior Bench Order, that:

1. Plaintiff is permanently enjoined from manufacturing, marketing or selling the hand-held, self-rollable banner, under the "Fanbana" name or otherwise.
2. Plaintiff is in contempt of this Court's Bench Order of November 21, 2006 and Order dated December 15, 2006, enjoining it from "from manufacturing, marketing or selling the hand-held, self-rollable banner, under the 'Fanbana' name or otherwise". As a consequence, Plaintiff is ordered to pay the Defendants a fine of eleven thousand three hundred and forty-two dollars (\$11,342.00), for the reasons set forth on the record during the March 1, 2007 hearing.
3. Plaintiff's complaint against the Defendants is dismissed with prejudice.

207291.11

4. This Court having found that the Defendants' United States Patent Nos. 4,848,437 and 5,176,774 are valid and that Plaintiff has infringed upon these patents, the matter is referred <sup>Purman</sup> to a Magistrate Judge for discovery and a determination as to the Defendants' damages.

 Dated: March 7, 2007

SO ORDERED.

  
Lawrence M. McKenna  
U.S.D.J.



# EXHIBIT D

Sherwood Group, Inc.

Page 1 of 1

Fanscrolls

**Item Number:** PTZBF-FOYTC

**Category:** Banners

**Description:** 28"x9-1/2" Open, 10"x1-3/4" Closed, Laminated Polyethylene, Expandable, Retractable Handle

**Colors:** Assorted

**Themes:** Business, College, Decoration, Entertainment, Organization, School, Sport

**Packaging:** Individually poly-bagged

**Production Time:** 5 to 10 working days



© QTE

<b>Quantity:</b>	250	500	1000	2500	5000	10000
<b>Your Price (each):</b>	\$1.95	\$1.75	\$1.65	\$1.48	\$1.25	\$1.09

Note: Additional charges may apply in some cases.

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Sherwood Group, Inc.

Page 1 of 1

**Rollabana - Super Saver****Item #:** PTZBF-FOYTC**Category:** Banners

**Description:** BamBans the Exclusive, legally authorized, Promotional Products Supplier for the Rollabana and all products derived from the Patented ( U.S. Patent # 5,176,774 ) self-rolling material authorized by Max Impact, LLC. \*\*Prices do not include shipping into the U.S.. View our catalog page for available levels of service\*\* It's a banner. It's a sign. It is suspended between 2 handles and opens and self-retracts easily. Popular at sporting games. They can be use as a map, for a new product launch, rallies.

**Colors:** Assorted**Themes:** College, Cheerleading, Organization, School, Sport, Politics**Imprint:** Full bleed. Price includes 1 color, 1 side**Additional Info:** Environmentally Friendly**Packaging:** Individually poly-bagged**Production Time:** Approx. 40 working days

Zoom (+)

<b>Quantity:</b>	250	500	1000	2500	5000	10000
<b>Your Price (each):</b>	\$2.48	\$2.25	\$2.15	\$2.02	\$1.67	\$1.48

Setup: \$100.00; Addtl Color: \$100.00; Additional charges may apply.

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## Rollabana - Super Saver

**Item #:** PTZBF-FOYTC  
**Category:** Banners  
**Description:** BamBams the Exclusive, legally authorized Promotional Products Supplier for the Rollabana and all products derived from the Patented ( U.S. Patent # 5176774 ) self-rolling material authorized by Max Impact, LLC \*\*Prices do not include shipping into the U.S.. View our catalog page for available levels of service\*\* It's a banner. It's a sign. It is suspended between 2 handles and opens and self-retracts easily. Popular at sporting games. They can be use as a map, for a new product launch, rallies.

**Colors:** Assorted  
**Themes:** College, Cheerleading, Organization, School, Sport, Politics  
**Imprint:** Full bleed. Price includes 1 color, 1 side  
**Additional Info:** Environmentally Friendly



Zoom (+)